west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-0281C
Plant ID No.:	045-00007
Applicant:	Southern West Virginia Asphalt, Inc.
Facility Name:	Whitman Plant #35
Location:	Whitman, Logan County
NAICS Code:	324121
Application Type:	Modification
Received Date:	April 29, 2014
Engineer Assigned:	Thornton E. Martin Jr.
Fee Amount:	$2,000.00
Date Received:	April 30, 2014
Complete Date:	May 28, 2014
Applicant Ad Date:	April 30, 2014
Newspaper:	*Logan Banner*
UTM's:	Easting: 409.526 km Northing: 4184.841 km Zone: 17
Description:	Applicant proposes to add a portable fractionated reclaimed asphalt pavement (FRAP) processing system.

DESCRIPTION OF PROCESS

Southern West Virginia Asphalt, Inc. (SWVA) is proposing to utilize a portable fractionated reclaimed asphalt pavement (FRAP) system at their Whitman, Plant #35 location.

Existing Facility

Aggregates are trucked to the site and stored in stockpiles OS-1 through OS-7. These aggregates include limestone, sand, slag, and reclaimed asphalt pavement (RAP). Asphaltic cement is trucked to the site and stored in heated tanks T-1 and T-2. Tank T-1 has a 7.6 MMBtu/hr natural gas-fired asphalt heater, AH-1, and tank T-2 has an electric asphalt heater. Number 2 fuel oil is trucked to the site and stored in tank T-3. On and off-road diesel for mobile equipment (endloaders, material transport trucks, and company vehicles) is trucked to the site and stored in tanks T-4 and T-5. Natural gas is piped to the facility.

Aggregates from OS-1 through OS-6 are transferred by a front-end loader to aggregate feed bins BS-1 through BS-4. The aggregates from these bins drop onto conveyor belt BC-1, which conveys the materials to BC-4. BC-4 transports the aggregates to the counterflow drum mix plant CFDM-1. RAP is transferred by front-end loader to RAP hopper BS-6. The RAP drops onto BC-2 and is conveyed to crusher CR-1. The RAP is transferred from CR-1 to screen SCR-1. Oversized material collects on BC-5 and is transferred back to BC-2 for re-crushing. Properly sized material collects on BC-3, which conveys the RAP to CFDM-1. Liquid asphaltic cement from T-1 and T-2 is piped to CFDM-1, where the various materials are then mixed to form hot mix asphalt (HMA). The HMA leaves the drum and drops onto slat conveyor SC-1, which conveys the HMA to silos BS-5 and BS-7 via a shifting gate. The HMA is transferred to trucks via the truck loadouts at the base of each silo and is shipped offsite.

Proposed Modification

Southern West Virginia Asphalt (SWVA) will be using an ASTEC ProSizer 3100 (a portable FRAP processing system), to process RAP at the site into a high-quality, well-graded aggregate coated with asphaltic cement. The ASTEC ProSizer 3100 is equipped with a 200 tph double-deck screen and a 75 tph horizontal shaft impactor. The unit is powered by a John Deere 6068H 173 hp engine (F-ENG1/N [F-1E]). A portable radial stacker will be used with the system and will be powered by the same engine. The unit will be utilized for a short time before is is moved to another site and will return to the site as needed. The existing RAP system will remain at the site. FRAP will be fed into the asphalt plant via the existing RAP feed system and the RAP throughput of the asphalt plant will not be increased. This modification does not include a change in the permitted throughput or maximum storage capacity of the facilities raw and sized stockpile (OS7/N).

RAP from existing RAP stockpile (OS7/N) is loaded into the feed hopper F-H1/PE by an endloader [F-TP1/MD]. The feed bins feeds belt conveyor F-BC1/PE [F-TP2/FE], which transports the RAP to the double-deck screen F-S1/FE [F-TP3/PE]. Oversized material is fed to belt conveyor F-BC2/N [F-TP4/FE], which transports the material to the horizontal shaft impactor F-CR1/FE [F-TP5/FE]. The material drops from the crusher onto belt conveyor F-BC1/PE [F-TP7/FE], which transports it back to the screen. The crusher can also be arranged so that oversized material from the screen bypasses the crusher and returns to the RAP stockpile OS7/N [F-TP6/N].

The smaller fractions from the screen are discharged to belt conveyor F-BC3/N [F-TP8/PE] and F-BC4/N [F-TP10/PE]. F-BC3/N and F-BC4/N can transfer material directly to the sized RAP stockpiles OS7A/N [F-TP9/MC] and OS7B/N [F-TP11/MD] or to radial stacker F-RS1/N [F-TP9/MD or F-TP11/MD]. The radial stacker is only fed by one of the belt conveyors F-BC3/N or F-BC4/N at any given time; not both at the same time. Material from F-RS1/N is transferred to OS7A/N or OS7B/N [F-TP12/MD]. From stockpiles OS7A/N and OS7B/N, material are transferred via endloader to the existing stationary RAP hopper BS6 [TP-9/MD].

When FRAP is transferred to the existing RAP system, the flop gate on the screen is opened so the fractionated RAP passes through the screen and is not double-processed.

See the following table for description, maximum throughput, control equipment, and maximum storage for all permitted equipment at the Whitman facility:

Table 1: Equipment Summary

Equipment ID No.	Emission Point ID	Description	Installation / Modification Date	Maximum Capacity		Control Device
FRAP System						
F-H1		FRAP Feed Hopper	2014	200 tons/hr	75,000 tons/yr	PE
F-BC1		FRAP Belt Conveyor	2014	200 tons/hr	75,000 tons/yr	PE
F-S1		FRAP Screen	2014	200 tons/hr	75,000 tons/yr	FE
F-BC2		FRAP Belt Conveyor	2014	75 tons/hr	30,000 tons/yr	N
F-CR1		FRAP Crusher	2014	75 tons/hr	30,000 tons/yr	FE
F-BC3		FRAP Belt Conveyor	2014	200 tons/hr	75,000 tons/yr	N
F-BC4		FRAP Belt Conveyor	2014	200 tons/hr	75,000 tons/yr	N
F-RS1		FRAP Radial Stacker	2014	200 tons/hr	75,000 tons/yr	N
F-ENG1	F-1E	FRAP Engine (John Deere 6068HFC93A-mfg. date 5/17/2013, EPA Interim Tier 4)	2014	9.28 gal/hr	173 hp @ 2,400 rpm	N
RAP System						
OS-7		RAP Stockpile	2009	25,000 tons	75,000 tons/yr	
BS-6		RAP Hopper	2009	20 tons	75,000 tons/yr	PE
BC-2		RAP Belt Conveyor	2009	30 tons/hr	75,000 tons/yr	PE
CR-1		RAP Crusher	2012	30 tons/hr	150,000 tons/yr	FE
SCR-1		RAP Scalping Screen	2012	30 tons/hr	150,000 tons/yr	WS, PE
BC-3		RAP Belt Conveyor	2009	30 tons/hr	75,000 tons/yr	PE
BC-5		RAP Belt Conveyor	2012	30 tons/hr	75,000 tons/yr	MC, PE

Equipment ID No.	Emission Point ID	Description	Installation / Modification Date	Maximum Capacity		Control Device
Aggregates System						
OS-1		Cold Aggregate Stockpile – L/S 467	1977	5,000 tons	100,000 tons/yr	
OS-2		Cold Aggregate Stockpile – L/S 8	1977	10,000 tons	200,000 tons/yr	
OS-3		Cold Aggregate Stockpile – Sand	1977	10,000 tons	150,000 tons/yr	
OS-4		Cold Aggregate Stockpile – Sand	1977	10,000 tons	150,000 tons/yr	
OS-5		Cold Aggregate Stockpile – L/S 8	1977	10,000 tons	50,000 tons/yr	
OS-6		Cold Aggregate Stockpile – Slag 8	1977	10,000 tons	100,000 tons/yr	
BC-1		Belt Conveyor	1977	400 tons/hr	300,000 tons/yr	PE
BS-1		Cold Feed Bin	1977	20 tons	300,000 tons/yr	PE
BS-2		Cold Feed Bin	1977	20 tons		PE
BS-3		Cold Feed Bin	1977	20 tons		PE
BS-4		Cold Feed Bin	1977	20 tons		PE
BC-4		Belt Conveyor	2012	400 tons/hr	300,000 tons/yr	PE
HMA System						
CDFM-1	1E	Cedaraprids E-400 Counterflow Drum Mix Plant (1992)	2012	400 tons/hr	300,000 tons/yr	APCD-1
APCD–1	1E	Dillman Equipment Pulse Jet Baghouse	2012			
SC-1		Screw Conveyor (baghouse dust)	2012	3 tons/hr	1,902 tons/yr	FE
SLC-1		HMA Slat Conveyor	2012	400 tons/hr	300,000 tons/yr	FE
BS-5		HMA Storage Silo	2012	200 tons	300,000 tons/yr	FE
BS-7		HMA Storage Silo	2012	200 tons	300,000 tons/yr	FE
Tanks						
T-1		Asphalt Storage Tank	2012	35,000 gal	151,200 gal/yr	
T-2		Asphalt Storage Tank	2012	20,000 gal		
T-3		Fuel Storage Tank – #2 fuel oil or used oil	2012	20,000 gal	2.24×10^6 gal/yr	
T-4		Fuel Storage Tank – Off-road disel	1977	2,000 gal	20,600 gal/yr	
T-5		Fuel Storage Tank – On-road diesel	1977	1,000 gal	10,000 gal/yr	
AH-1	2E	Asphalt Heater – 7.6 MMBtu/hr natural gas	2012	1,500 scf/hr	1.314×10^7 scf/yr	

SITE INSPECTION

Fred Teel of the Compliance and Enforcement section performed a site inspection on November 14, 2011. The site inspection was a result of a citizen's complaint of dust and odor. The water spray system was not in operation. The plant Operator claimed the sprays could only provide partial coverage because of wind, so he was not using them at all. The inspection resulted in a violation. The water spray system issue was addressed with the new equipment installation of permit modification (R13-0281B). The violation closure document was received on January 18, 2012.

Directions in application: US-119 South to Old Hwy 119 exit for 2.1 miles. Turn right (south) onto CR-9/01 (Whitman Creek Rd.) For 1.9 miles. Plant entrance is located on the left.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

The Whitman facility will operate at a maximum production rate of 400 tons per hour and 300,000 tons per year of asphalt. Emissions were calculated by Potesta & Associates, Inc. on behalf of Southern West Virginia, Asphalt, Inc. for the FRAP addition only. Emissions for the various other components/processes/equipment were obtained from the previous application and subsequent permit (R13-0281B). Please see the following descriptions and tables for calculation explanations:

RAP Crushing and Screening

AP-42 Section 13.2.4-4 (Miscellaneous Sources: Controls) and the WVDAQ G40-C Emissions

Worksheet were utilized to calculate the RAP crushing and screening emissions. Crusher CR-1 will be fully enclosed, and water sprays will be used on partially enclosed screen SCR-1. The facility will be limited to a process rate of 30 tons per hour and 150,000 tons per year of RAP.

Table 2a: Existing RAP Crushing/Screening

RAP Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tons/yr)
CR-1	Total Particulate Matter	0.01	0.03
	PM_{10}	0.01	0.02
SCR-1	Total Particulate Matter	0.15	0.38
	PM_{10}	0.05	0.13
Total RAP Crushing/Screening	Total Particulate Matter	0.16	0.41
	PM_{10}	0.06	0.15

Materials Handling

AP-42 Section 13.2.4 (Miscellaneous Sources: Aggregate Handling and Storage Piles) was used to obtain emission factors for facility transfer points.

Table 2b: Materials Handling

Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tons/yr)
Transfer Points	Total Particulate Matter	11.04	4.22
	PM_{10}	5.32	2.04

Silo Filling and Plant Loadout

Silo filling and plant loadout emissions were calculated using emission factors from AP-42 Table 11.1-14. (Hot Mix Asphalt Plants: Predictive Emission Factor Equations for Load-Out and Silo Filling Operations) and Table 11.1-16 (Hot Mix Asphalt Plants: Speciation Profiles for Load-Out, Silo Filling, and Asphalt Storage Emissions - Organic Volatile-Based Compounds).

Table 2c: Silo Filling and Plant Loadout

Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tons/yr)
Silo Filling	Total Particulate Matter	0.09	0.04
	PM_{10}	0.02	0.01
	VOC	9.74	3.66
	CO	0.94	0.36
	Total HAPs*	0.127	0.048
Plant Loadout	Total Particulate Matter	0.04	0.02
	PM_{10}	0.0	0.00
	VOC	1.56	0.59
	CO	0.54	0.20
	Total HAPs*	0.025	0.009

* HAPs for Silo Filling include Benzene, Ethylbenzene, Toluene, Xylene, and Formaldehyde

Stockpiles

Fugitive emissions from stockpiles were calculated using emission factors from AP-42 Section 13.2.4 (Miscellaneous Sources: Aggregate Handling and Storage Piles).

Table 2d: Fugitive Emissions – Stockpiles

Fugitive Emissions Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tons/yr)
Stockpiles (OS-1 through OS-7)	Total Particulate Matter	0.19	0.85
	PM_{10}	0.09	0.40

Haulroads

Emission factors for haulroads were taken from AP-42 Section 13.2 (Miscellaneous Sources: Paved Roads and Unpaved Roads). Site haulroads will consist of both paved and unpaved roads. Paved roads will be 0.04 miles and unpaved roads will be 0.18 miles. Trucks utilizing both the paved and unpaved roads will be product trucks, aggregate/RAP trucks, asphaltic cement trucks, No. 2 fuel oil trucks and used oil trucks at a maximum rate of 51 trips total per hour and 37,029 trips per year. Endloaders will travel on the unpaved portion at a maximum rate of 67 trips per hour and 50,000 trips per year. Fixed water sprays will be utilized at the facility to minimize fugitive emissions from haulroads.

Table 2e: Fugitive Emissions – Haulroads

Fugitive Emissions Source	*Pollutant*	*Maximum Hourly Emissions (lb/hr)*	*Maximum Annual Emissions (tons/yr)*
Paved Haulroads	*Total Particulate Matter*	*2.52*	*0.92*
	PM_{10}	*0.50*	*0.18*
Unpaved Haulroads	*Total Particulate Matter*	*34.83*	*12.90*
	PM_{10}	*10.26*	*3.80*
Total Haulroads	*Total Particulate Matter*	*37.35*	*13.82*
	PM_{10}	*10.76*	*3.98*

Asphalt Counterflow Drum Mixer

The Cedarapids E-400 counterflow drum mixer (CFDM-1) utilizes a Cedarapids DA 130-100 dryer. The dryer may use a maximum of 97,276 scf/hr of natural gas, 724.64 gal/hr of #2 fuel oil, or 719.42 gal/hr of used oil. The maximum sulfur content of the #2 fuel oil and used oil is 0.5%. Emission factors were taken from AP-42 Table 11.1-10. The highest emission factors and HAP values between natural gas, #2 fuel oil, and used oil were used. A Dillman Equipment Pulse jet baghouse (APCD-1) will be utilized to control particulate emissions from CFDM-1. The particulates will pass from the dryer through the ductwork and into the baghouse, where larger particles are knocked out of the air stream to the bottom of the baghouse. The remaining fines are captured by the bags and released by reversed jet air to the bottom of the baghouse. The fines and large particles are returned to the mixing chamber through an auger system and become part of the final hot mix asphalt product.

Table 2f: Asphalt Counterflow Drum Mixer

Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tons/yr)
CFDM-1 (Emission Point 1E)	Carbon Monoxide	52.00	19.50
	Nitrogen Oxides	22.00	8.25
	Sulfur Dioxide	23.20	8.70
	Total Particulate Matter	25.36	9.51
	PM_{10}	5.83	2.19
	Volatile Organic Compounds	12.80	4.80
	HCl	0.08	0.03
	Acetaldehyde	0.52	0.20
	Benzene	0.16	0.06
	Ethylbenzene	0.10	0.04
	Formaldehyde	1.24	0.47
	Toluene	1.16	0.44
	Xylene	0.08	0.03
	PAH HAPs total	0.35	0.13
	Metal HAPs total	0.0495	0.0189
	TOTAL HAPs	4.20	1.58

Asphalt Heater

The Whitman facility will utilize two (2) asphalt heaters. An electric heater will be used to heat the asphalt in tank T-1. There will be no emissions associated with the electric heater. A natural gas fired 7.6 MMBtu/hr heater (AH-1) will be used to heat the asphalt in tank T-1. The heater uses a maximum of 1,500 scf per hour of natural gas. Annual emissions were calculated assuming the heater would always run (8,760 hours per year). Emission factors for the calculations were taken from AP-42 1.4 (External Combustion Sources: Natural Gas Combustion) Tables 1.4-1 and 1.4-2.

Table 2g: Asphalt Heater

Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tons/yr)
AH-1 (Emission Point 2E)	Carbon Monoxide	0.13	0.55
	Nitrogen Oxides	0.15	0.66
	Sulfur Dioxide	0.001	0.004
	Total Particulate Matter	0.01	0.05
	PM10	0.01	0.05
	Volatile Organic Compounds	0.01	0.04
	Lead	0.000001	0.000003

Tanks

Tanks T-1 and T-2 will be utilized to store finished product. Tanks T-4 (2,000 gal) and T-5 (1,000 gal) will store diesel fuel for usage in mobile equipment (endloaders, material transport trucks, and company vehicles). Tank T-3 (20,000 gal) will be used to store No. 2 fuel oil or used oil for use by the dryer in the counterflow drum mixer. Tank T-3 will have a vertical fixed roof. The program Tanks 4.0 was used to analyze tank T-3. The vertical fixed roof tank, which will store No. 2 fuel oil or used oil will have a working loss of 17.58 pounds and a breathing loss of 0.09 pounds.

Portable Fractionated Reclaimed Asphalt Pavement (FRAP) Processing Unit

The Prosizer 3100 is a portable plant that processes milled RAP. It consists of a horizontal shaft impactor, a double deck screen, four (4) belt conveyors, a radial stacker, a feed hopper/bin, and an engine for electrical and hydraulic power. The plant is capable of 200 tons per hour (tph) and will be limited to 75,000 tons per year (tpy).

Table 3a: Engine Emissions (Prosizer 3100)

Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tons/yr)
F-ENG1 (Emission Point F-1E)	Carbon Monoxide	1.22	0.24
	Nitrogen Oxides	5.65	1.13
	Sulfur Dioxide	0.37	0.07
	Total Particulate Matter	0.40	0.08
	PM_{10}	0.40	0.08
	Volatile Organic Compounds	0.46	0.09
	Formaldehyde	0.0015	0.0003
	TOTAL HAPs	0.0049	0.001

*Emission factors from AP-42 Table 3.3-1(Criteria Pollutants) and Table 3.3-2 (HAPS).

Table 3b: Total Process Associated Emissions (Prosizer 3100)

Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tons/yr)
FRAP (Prosizer 3100)	Carbon Monoxide	1.22	0.24
	Nitrogen Oxides	5.65	1.13
	Sulfur Dioxide	0.37	0.07
	Total Particulate Matter	4.82	1.75
	PM_{10}	2.00	0.65
	Volatile Organic Compounds	0.46	0.09
	Formaldehyde	0.0015	0.0003
	TOTAL HAPs	0.0049	0.001

SUMMARY OF EMISSIONS (see Tables 4a, 4b, and 4c):

Table 4a: Current Facility Emissions (R13-0281B)

Emission Type	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tons/yr)
Total Particulate Matter	74.24	28.92
Fugitive (Haulroads & Stockpiles)	37.54	14.67
PM_{10}	22.10	8.82
Fugitive (Haulroads & Stockpiles)	10.85	4.38
VOC	24.12	9.10
SO_2	23.20	8.70
NOx	22.15	8.91
CO	53.61	20.61
Total HAPs	4.35	1.65

Table 4b: Proposed Facility Emissions (R13-0281C)

Emission Type	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tons/yr)
Total Particulate Matter	79.06	30.67
Fugitive (Haulroads & Stockpiles)	40.29	16.04
PM10	24.10	9.47
Fugitive (Haulroads & Stockpiles)	11.66	4.79
VOC	24.58	9.19
SO_2	23.57	8.77
NOx	27.80	10.04
CO	54.83	20.85
Total HAPs	4.36	1.65

Table 4c: CHANGE in Total Emissions

Emission Type	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tons/yr)
Total Particulate Matter	4.82	1.75
Fugitive (Haulroads & Stockpiles)	2.75	1.37
PM_{10}	2.00	0.65
Fugitive (Haulroads & Stockpiles)	0.81	0.41
VOC	0.46	0.09
SO_2	0.37	0.07
NOx	5.65	1.13
CO	1.22	0.24
Total HAPs	0.01	0.001

REGULATORY APPLICABILITY

PSD has no applicability to the proposed facility. The proposed modification of a hot mix asphalt plant is subject to the following state and federal rules:

45CSR2 To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers

The purpose of this rule is to establish limitations for smoke and particulate matter which are discharged from fuel burning units. Per this rule, Section 2.14 defines an indirect heat exchanger as a device that combusts any fuel and produces steam or heats water or any other heat transfer medium. Section 2.10 defines a fuel burning unit as any furnace, boiler apparatus, device, mechanism, stack or structure used in the process of burning fuel or other combustible material for the primary purpose of producing heat or power by indirect heat transfer. The facility is exempt from sections 4, 5, 6, 8, and 9 because the asphalt heater (7.6 MMBtu/hr) is below 10 MMBtu/hr. The facility will be subject to the opacity requirements in this rule, which is 10% opacity based on a six minute block average.

45CSR3 To Prevent and Control Air Pollution from the Operation of Hot Mix Asphalt Plants

The purpose of this rule is to establish emission limitations for hot mix asphalt plants and the plant property. The facility is subject to this rule because it meets the definition of Hot Mix Asphalt Plant as found in Section 2.14. The facility must meet visible emission limits of 40% opacity during start-up or shutdown and 20% opacity during operations of any fuel burning equipment. The facility shall be operated and maintained in a manner as to prevent emission of particulate matter from any point other than a stack outlet. The facility will utilize water sprays, minimized drop heights, partial enclosures, full enclosures, and a baghouse to minimize particulate emissions. Opacity monitoring, recordkeeping, and reporting requirements are included in permit R13-0281C.

45CSR7 To Prevent and Control Particulate Matter Air Pollution from Manufacturing Processes and Associate Operations

The purpose of this rule is to prevent and control particulate matter air pollution from manufacturing processes and associated operations. The facility is subject to the requirements of this rule because it meets the definition of "Manufacturing Process" found in Section 2.20 of this rule. The facility will need to be in compliance with Subsection 3.1 – no greater than 20% opacity (opacity monitoring, recordkeeping, and reporting requirements are included in permit 13-0281C); Subsection 3.7 – no visible emissions from any storage structure pursuant to subsection 5.1 which is required to have a full enclosure (hot mix asphalt storage silos BS-5 and BS-7 will be fully enclosed); Subsection 4.1 – PM emissions shall not exceed those under Table 45-7A (see paragraph below); Subsection 5.1 – manufacturing process and storage structures must be equipped with a system to minimize emissions (baghouse APCD-1 controls emissions from the hot mix asphalt plant CFDM-1); Subsection 5.2 – minimize PM emissions from haulroads and plant premises (water sprays will be utilized to control these emissions).

According to Table 45-7A, for a type 'a' source with a maximum process weight rate of 800,000 lb/hr, the maximum allowable emission rate is 50 lb/hr of particulate matter. The proposed maximum point source emission rate at the facility is 38.77 lb/hr of particulate matter according to calculated emissions in permit application R13-0281C.

45CSR10 To Prevent and Control Air Pollution from Emissions of Sulfur Oxides

The purpose of this rule is to prevent and control air pollution from the emission of sulfur oxides. Per this rule, Section 2.9 defines an indirect heat exchanger as a device that combusts any fuel and produces steam or heats water or any other heat transfer medium. Section 2.8 defines a fuel burning unit as any furnace, boiler apparatus, device, mechanism, stack or structure used in the

process of burning fuel or other combustible material for the primary purpose of producing heat or power by indirect heat transfer. This facility is exempt from sections 3 and 6 because the liquid

asphalt heater (7.6 MMBtu/hr) is below 10 MMBtu/hr. According to section 4.1., sulfur dioxide concentrations must fall below 2,000 parts per million by volume (included in permit as 4.1.3.(e).

45CSR13 Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits, and Procedures for Evaluation

The purpose of this rule is to set forth the procedures for stationary source reporting, and the criteria for obtaining a permit to construct and operate a new stationary source which is not a major stationary source, to modify a non-major stationary source, to make modifications which are not major modifications to an existing major stationary source and to relocate non-major stationary sources within the state of West Virginia.

The applicant is applying for a Rule 13 modification permit for the Whitman facility pursuant to Section 2.24.e. The facility is subject to the following sections of this rule: reporting requirements, requirements for modifications of stationary sources, demonstrating compliance with stationary sources, public review procedures, and permit application fees. The facility will demonstrate compliance by following all the applicable rules and regulations that apply to the facility. They will also follow the terms and conditions set forth in permit R13-0281C. The permittee published a Class I legal advertisement in the *Logan Banner* on April 30, 2014 and submitted an application fee of $2,000.00, which includes $1,000.00 NSPS fees.

45CSR16 Standards of Performance for New Stationary Sources

This rule establishes and adopts standards of performance for new stationary sources promulgated by the United States Environmental Protection Agency pursuant to section 111(b) of the federal Clean Air Act, as amended (CAA). The facility is subject to 40cfr60 Subparts I, OOO and IIII.

40CFR60 Subpart I: Standards of Performance for Hot Mix Asphalt Facilities

The facility is subject to this Subpart because it meets the definition of "hot mix asphalt facility" as defined in 60.91(a) – hot mix asphalt facility means any facility used to manufacture hot mix asphalt by heating and drying aggregate and mixing with asphalt cements and consisting of any combination of the following: dryers; systems for screening, handling, storing, and weighing hot aggregate; systems for loading, transferring, and storing mineral filler, systems for mixing hot mix asphalt; and the loading, transfer, and storage systems associated with emission control systems. Permit 13-0281C requires opacity testing, which will show opacity values of 20% or under.

40CFR60 Subpart OOO: Standards of Performance for Nonmetallic Minerals Processing Plant

In addition to nonmetallic minerals processing plants, provisions of this subpart also apply to crushers and grinding mills at hot mix asphalt facilities that reduce the size of nonmetallic minerals embedded in recycled asphalt pavement and subsequent affected facilities up to, but not including, the first storage silo or bin are subject to the provisions of this subpart. Therefore, the crushers, screens, conveyors and bins associated with RAP processing are subject to this subpart. The facility shall be in compliance with 60.672 (b) no greater than 7% opacity from any transfer point on belt conveyors or from any other affected facility (as defined in 60.670 and 60.671) and no greater than 12% opacity from any crusher when the particulate matter control methods and devices (all control methods shown in equipment table) proposed within application R13-0281C are in operation.

45CFR60 Subpart IIII—Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Southern West Virginia Asphalt, Inc. is subject to this subpart because the engine was manufactured after April 1, 2006. The engine emissions for F-ENG1 [F-1E, John Deere 6068HFC93A, 173 hp CI RICE, mfg.date of 5/17/2013] is EPA Interim Tier IV Certified, Certificate Number: DJDXL06.8210-019.

40CFR63 Subpart ZZZZ—National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

Southern West Virginia Asphalt, Inc. is subject to 40CFR63 Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, because ENG1 is considered a new area source of HAPs since it will be constructed on or after June 12, 2006, however, the only requirements that apply are those required under 45CFR60 Subpart IIII.

The proposed modification of Southern West Virginia Asphalt, Inc.'s existing aggregate processing facility is not subject to the following state and federal rules:

45CSR14 Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration

In accordance with 45CSR14 Major Source Determination, the proposed additions and aggregate processing facilities are not listed in Table 1. The facilities will have a total potential to emit 38.77 TPY of a regulated air pollutant (PM), not including fugitive emissions, which is less than the 45CSR14 threshold of 250 TPY. This facility is not listed in Table 2, and so fugitive emissions are not included when determining source applicability. Therefore, the proposed construction is not subject to the requirements set forth within 45CSR14.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

Acetaldehyde:
Acetaldehyde is mainly used as an intermediate in the synthesis of other chemicals. It is ubiquitous in the environment and may be formed in the body from the breakdown of ethanol. Acute (short-term) exposure to acetaldehyde results in effects including irritation of the eyes, skin, and respiratory tract. Symptoms of chronic (long-term) intoxication of acetaldehyde resemble those of alcoholism. Acetaldehyde is considered a probable human carcinogen (Group B2) based on inadequate human cancer studies and animal studies that have shown nasal tumors in rats and laryngeal tumors in hamsters.

Benzene:
Benzene is found in the air from emissions from burning coal and oil, gasoline service stations, and motor vehicle exhaust. Acute (short-term) inhalation exposure of humans to benzene may cause drowsiness, dizziness, headaches, as well as eye, skin, and respiratory tract irritation, and, at high levels, unconsciousness. Chronic (long-term) inhalation exposure has caused various disorders in the blood, including reduced numbers of red blood cells and aplastic anemia, in occupational settings. Reproductive effects have been reported for women exposed by inhalation to high levels, and adverse effects on the developing fetus have been observed in animal tests. Increased incidence of leukemia (cancer of the tissues that form white blood cells) have been observed in humans occupationally exposed to benzene. EPA has classified benzene as a Group A, human carcinogen.

Ethyl Benzene:
Ethyl benzene is mainly used in the manufacturing of styrene. Acute (short-term) exposure to ethyl benzene in humans results in respiratory effects, such as throat irritation and chest constriction, irritation of the eyes, and neurological effects, such as dizziness. Chronic (long-term) exposure to ethyl benzene by inhalation in humans has shown conflicting results regarding its effects on the blood. Animal studies have reported effects on the blood, liver, and kidneys from chronic inhalation exposure to ethyl benzene. Limited information is available on the carcinogenic effects of ethyl benzene in humans. In a study by the National Toxicology Program (NTP), exposure to ethyl benzene by inhalation resulted in an increased incidence of kidney and testicular tumors in rats, and lung and liver tumors in mice. EPA has classified

ethyl benzene as a Group D, not classifiable as to human carcinogenicity.

Formaldehyde:
Formaldehyde is used mainly to produce resins used in particle board products and as an intermediate in the synthesis of other chemicals. Exposure to formaldehyde may occur by breathing contaminated indoor air, tobacco smoke, or ambient urban air. Acute (short-term) and chronic (long-term) inhalation exposure to formaldehyde in humans can result in respiratory symptoms, and eye, nose, and throat irritation. Limited human studies have reported an association between formaldehyde exposure and lung and nasopharyngeal cancer. Animal inhalation studies have reported an increased incidence of nasal squamous cell cancer. EPA considers formaldehyde a probable human carcinogen (Group B1).

Toluene:
The acute toxicity of toluene is low. Toluene may cause eye, skin, and respiratory tract irritation. Short-term exposure to high concentrations of toluene (e.g., 600 ppm) may produce fatigue, dizziness, headaches, loss of coordination, nausea, and stupor; 10,000 ppm may cause death from respiratory failure. Ingestion of toluene may cause nausea and vomiting and central nervous system depression. `Contact of liquid toluene with the eyes causes temporary irritation. Toluene is a skin irritant and may cause redness and pain when trapped beneath clothing or shoes; prolonged or repeated contact with toluene may result in dry and cracked skin. Because of its odor and irritant effects, toluene is regarded as having good warning properties. The chronic effects of exposure to toluene are much less severe than those of benzene. No carcinogenic effects were reported in animal studies. Equivocal results were obtained in studies to determine developmental effects in animals. Toluene was not observed to be mutagenic in standard studies.

Xylene:
Commercial or mixed xylene usually contains about 40-65% m-xylene and up to 20% each of o-xylene and p-xylene and ethyl benzene. Xylenes are released into the atmosphere as fugitive emissions from industrial sources, from auto exhaust, and through volatilization from their use as solvents. Acute (short-term) inhalation exposure to mixed xylenes in humans results in irritation of the eyes, nose, and throat, gastrointestinal effects, eye irritation, and neurological effects. Chronic (long-term) inhalation exposure of humans to mixed xylenes results primarily in central nervous system (CNS) effects, such as headache, dizziness, fatigue, tremors, and incoordination; respiratory, cardiovascular, and kidney effects have also been reported. EPA has classified mixed xylenes as a Group D, not classifiable as to human carcinogenicity.

AIR QUALITY IMPACT ANALYSIS

Air dispersion modeling was not performed due to the size and location of this facility and the limit of the proposed modification. This facility is located in Logan County, West Virginia, which is designated as attainment for PM2.5 (particulate matter less than 2.5 microns in diameter). The facility is a minor source and not subject to 45CSR14.

MONITORING OF OPERATIONS

Southern West Virginia Asphalt, Inc. shall monitor RAP production throughput (for CR-1, SCR-1, F-CR1 and F-S1), HMA throughput (for CFDM-1), dryer fuel usage (for CFDM-1), heater natural gas usage (for AH-1), #2 Fuel Oil useage for (F-ENG1)and opacity checks. The following language incorporates these requirements into the permit:

4.2.1. For the purpose of determining compliance with RAP maximum throughput and emission limits set forth in 4.1.1., the permittee shall monitor RAP throughput and maintain certified daily records. An example form is included as Appendix A. Such records shall be retained onsite by the permittee for at least five (5) years. Certified records shall be made available to the Director or his duly authorized representative upon request.

4.2.2. For the purpose of determining compliance with counterflow drum mixer maximum

throughput and emission limits set forth in 4.1.2., the permittee shall monitor HMA throughput and maintain certified daily records. An example form is included as Appendix A. Such records shall be retained onsite by the permittee for at least five (5) years. Certified records shall be made available to the Director or his duly authorized representative upon request.

4.2.3. For the purpose of determining compliance with the counterflow drum mixer fuel usage and emission limits set forth in 4.1.3., the permittee shall maintain monthly records of the natural gas, No. 2 fuel oil, and used oil consumed in the dryer utilizing the form identified as Appendix B. Certified records shall be made available to the Director or his duly authorized representative upon request.

4.2.4. For the purpose of determining compliance with the asphaltic cement heater maximum natural gas usage and emission limits set forth in 4.1.3., the permittee shall maintain monthly records of the natural gas consumed in the 7.6 MMBTU/hr heater utilizing the form identified as Appendix C. Certified records shall be made available to the Director or his duly authorized representative upon request.

4.2.5. For the purpose of determining compliance with the opacity limits set forth in 4.1.1. and 4.1.2., the permittee shall conduct visible emission checks and / or opacity monitoring and recordkeeping for all emission sources subject to an opacity limit.

a. The visible emission check shall determine the presence or absence of visible emissions. At a minimum, the observer must be trained and knowledgeable regarding the effects of background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor) on the visibility of emissions. This training may be obtained from written materials found in the References 1 and 2 from 40CFR Part 60, Appendix A, Method 22 or from the lecture portion of the 40CFR Part 60, Appendix A, Method 9 certification course.

b. Visible emission checks shall be conducted at least once per calendar month with a maximum of forty-five (45) days between consecutive readings. These checks shall be performed at each source (stack, transfer point, fugitive emission source, etc.) for a sufficient time interval, but no less than one (1) minute, to determine if any visible emissions are present. Visible emission checks shall be performed during periods of facility operation and appropriate weather conditions.

c. If visible emissions are present at a source(s) for two (2) consecutive monthly checks, the permittee shall conduct an opacity reading at that source(s) using the procedures and requirements of Method 9 as soon as practicable, but within seventy-two (72) hours of the final visual emission check. A Method 9 observation at a source(s) restarts the count of the number of consecutive readings with the presence of visible emissions.

CHANGES TO PERMIT R13-0281B

The following equipment are proposed in the 13-0281C permit modification application:

- New FRAP hopper/bin F-H1.
- New FRAP belt conveyors F-BC1 through F-BC4.
- New FRAP horizontal shaft impacter F-CR1.
- New FRAP double deck screen F-S1.
- New FRAP radial stacker F-RS1.
- One (1) Diesel Engine (2013 John Deere, 173hp, Interim Tier IV Certification)

RECOMMENDATION TO DIRECTOR

The information contained in the permit application R13-0281C indicates that compliance with all applicable state rules and federal regulations should be achieved when all proposed control methods are in operation. Therefore, the granting of a permit to Southern West Virginia Asphalt, Inc. for the modification of a hot mix asphalt facility located in Whitman, Logan County, West Virginia, is hereby recommended.

Thornton E. Martin Jr.
Permit Engineer

May 29, 2014

Date